

Cognitive and Constructivist Strategies for Teaching about Language and for Providing Reading and Writing Instruction

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Abstract

College students learning about language and using this knowledge to learn how to teach reading and writing should participate in strategies that simulate systems in the language and strategies that they in turn will use in their own classrooms. Cognitive and constructivist strategies are interactive and thus more powerful than the traditional lecture method of teaching college students, yet too often the traditional method prevails.

Four interactive strategies that we have used successfully are cooperative learning, semantic feature analysis, nonsense story analysis, and fictitious writing systems. Surveys, exams, and informal discussions with students following the use of these strategies indicate that students found these strategies to be very effective.

Introduction

In far too many cases, professors of education indirectly tell their students, even in methodology courses, “Teach as I say to teach, not as I teach.” Admittedly, lecturing to a class of prospective teachers seems to be the most expedient way to cover the complex content and multiple strategies that should be taught. It is not unlike the situation that often is cited by teachers in K-12 who state that they are expected to cover all of a prescribed course of study (as usually found in textbooks) by the end of a year or by the time mandatory high-stakes tests are given in their schools.

Reading methodology courses exemplify the broad spectrum that encompasses the curriculum in a single disciplinary area. In the past, one three-hour course in reading was often all that was required for elementary education majors (apart from a single course each in language arts and children’s literature). However, teaching the basic components of reading knowledge takes a considerable amount of time. Consider the content and strategies that most experts agree are the basic essentials to teach in reading: phonemic awareness, phonics, vocabulary development, comprehension, and more recently, fluency (Adler and others¹; The National Reading Panel²). In each area, there are numerous facts and strategies to be taught. For

¹ C. R. Adler (Ed.) and others, *Put Reading First: The Research Building Blocks for Teaching Children to Read* (Jessup, MD: National Institute for Literacy, 2001), iii, 2, 12, 22, 37, 47.

² National Institute of Child Health and Human Development, *Report of the National Reading Panel. Teaching Children to Read—An Evidence-Based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction*, (Washington, D. C.: U.S. Government Printing Office, 2000), 1-3.

³ R. L. Allington, *What Really Matters for Struggling Readers: Designing Research-Based Programs*, 2nd ed. (Boston: Pearson Allyn and Bacon, 2006), 96-106.

⁴ D. R. Reutzel and R. B. Cooter, Jr., *Teaching Children to Read: Putting the Pieces Together*, 4th ed. (Upper Saddle River, NJ: Pearson Merrill Prentice Hall, 2004), 198-199.

⁵ R. F. Hudson, H. B. Lane, and P.C. Pullen, “Reading Fluency Assessment and Instruction: What, Why, and How?” *The Reading Teacher*, 58 (8), 702-714.

example, to adequately address the best-recognized strategies for teaching fluency, identified by Allington as repeated reading, Readers' Theater, echo reading, modeling, paired reading, choral reading, and audio-taped reading³, requires a significant amount of time in a three-hour reading methodology course or even two three-hour courses. Then there are other facts/processes that teachers should know about this component of reading, including major skills (automaticity, quality, rate, prosody [pitch and other elements of expression]), benchmark standards, and assessment of fluency (Reutzels, Cooter⁴; Hudson, Lane, Pullen⁵). To a lesser extent, the problem of "too much content, too little time to teach it" occurs in the single secondary reading course that has become a standard requirement for those who wish to become teachers of science, social studies, mathematics, and other subject areas.

Recent publishing history backs up our assertion that there is more in reading than can be covered in one or two courses. Furthermore, course expectations are growing rapidly. In the past few years, more books have surfaced in reading instruction with "essentials" in the title than ever before, suggesting that there has to be a narrowing of what can be included in a basic course or two in reading methodology. In addition, there are more books being published in each of the basic components of reading (Teaching Comprehension, Vocabulary Development, Phonics, etc.), indicating growth of knowledge about the reading process and strategies for teaching it.

Going beyond the basic content and strategies for teaching each component of reading takes additional time. How to find reading levels, basal readers vs. other kinds of programs (literature-based programs, leveled readers, language experience programs—to name a few), integration of reading with writing, primary-reading programs vs. upper-elementary grade reading programs, assessment techniques for reading, and more recently, technology and how to use it in the teaching of reading—extend the knowledge one should know for teaching reading. In addition, there is the practicum aspect of teaching reading that includes planning and implementing reading lessons. Concomitantly, both motivation and aliteracy are areas that must be considered, particularly in those courses geared toward instructional design for struggling readers.

Added to the fact that professors of reading instruction feel that they must "talk through" the vast amount of content and strategies in a limited number of reading courses, there is the continuing, hard-to-break cycle of one "teaching as he/she has been taught." This cycle goes beyond professors of reading to include professors from all fields. The end result is far too often

a situation in which there is much less transfer than there should be between what is “taught” in a college course to the classroom where prospective teachers will be teaching. Although not as severe as in reading methodology, writing instruction suffers some of the same problems, compounded by the fact that writing is given even less attention because time in the introductory language arts course is usually shared with several other areas such as spelling, handwriting, usage, listening, and speaking.

To alleviate this situation, prospective teachers undoubtedly need more than one or two three-hour courses in reading and a single three-hour language arts course where writing instruction is taught. While taking more reading courses than the minimum of one or two will hopefully be a direction colleges follow in the future, the best that we can do in the meantime is to motivate students better than we are now doing to want to learn more about the powerful skill areas of reading and writing and how to most effectively teach them. Where there is room for electives, reading and writing courses must be included as premier options. Where there is room for growth through in-service, especially during the first years of teaching, schools should mandate extended learning in these areas. And through meaningful growth furnished by professional associations, new teachers must be highly involved. However, as important as these activities are, it is our belief that they will not have the impact of cognitive and constructivist strategies used by reading and language arts professors in the college classroom to help prospective teachers (1) better understand systems in the language that they will use and teach daily and how these systems are represented via written symbols, (2) practice and internalize the values of many of the reading/writing strategies now introduced too frequently via the “telling” approach to teaching, and (3) use these strategies more effectively in teaching every day to every child.

Strategies/Theoretical Foundations

The cognitive and constructivist strategies that we have used successfully in our reading and language arts methodology courses include cooperative learning strategies (especially Jigsaw), Semantic Feature Analysis (SFA), nonsense stories, and writing systems of four fictitious groups of people. While we have seen and used other strategies, we wish to address these four, give some background studies that have been done in these areas, tell you what we have done, and tell you about the results. Theoretical underpinnings of all four of these strategies include the work of cognitive and social constructivists. The two kinds of

constructivism, social and cognitive, are complementary and equally support the strategies we have found to be successful in our college classrooms—strategies that we believe will help prospective teachers transfer more effectively what they learn in the college classroom to the K-12 classrooms in which they will teach.

The relationship between cognitive constructivism and social constructivism is explained by Maxim in the following way:

Cognitive constructivists and *social constructivists* have much in common, but they differ noticeably in one key area—the extent and type of involvement of both students and teachers. Although each model requires effort and responsibility on the part of both, *social constructivists* stress the organization of “communities of learners” in which ‘more expert’ adults or peers provide assistance to the less skilled learners. *Cognitive constructivists*, on the other hand, describe a learner-centered environment where the making of knowledge is carried out by individual students in a fashion that supports their interests and needs. For *cognitive constructivists*, learning is primarily an individualistic venture.⁶

Noll states that constructivism has been influenced by the theories of Jean Piaget, Lev Vygotsky, and Jerome Bruner.⁷ Noll further explains that “Constructivists contend that traditional models emphasize knowledge transmission without producing deeper levels of understanding and internalization.”⁸ Social engagement is an integral component of constructivist-based instruction. Tovani points out that small-group instruction “stimulates higher levels of thinking...encourages articulation of thinking...helps students remember...allows students to make connections and see different perspectives, as well as promotes deeper understanding.”⁹ It is this deeper level of understanding that we believe must be promoted via a change in teaching strategies in the college classroom, not only in reading methodology courses but in all coursework that prospective teachers take.

Elkind, while admitting that the constructivist movement has not been as successful as it should be, contends that constructivism “is now a major educational philosophy and pedagogy”

⁶ G. W. Maxim, *Dynamic Social Studies for Constructivist Classrooms*, 8th ed. (Upper Saddle River, NJ: Pearson, Merrill Prentice Hall, 2006), 339.

⁷ J.W. Noll, *Taking Sides—Clashing Views on Educational Issues*, 14th ed. (Dubuque, IA: McGraw-Hill Contemporary Learning Series, 2007), 50-51.

⁸ Ibid.

⁹ C. Tovani, *Do I Really Have to Teaching Reading?* (Portland, ME: Stenhouse Publishers, 2004), 90.

¹⁰ D. Elkind, “The Problem With Constructivism,” *The Educational Forum*, 2004, 68, 306-307.

and calls for readiness (1) in the curriculum, (2) on the part of society (becoming a nation eager to accept educational change), and (3) in teacher preparatory programs. Of the latter, Elkind contends that learning to teach has too often been relegated to learning “in the field.”¹⁰ In addition to Elkind’s belief that teachers should be taught more theoretical views, like constructivism, prior to entering the job market, we contend that a change in how college professors of education teach is an appropriate starting point for helping teachers of reading and writing (and of other disciplines, too) more effectively implement strategies that they now merely hear and perhaps read about in their coursework.

The constructivist philosophy can be most helpful as teacher educators scaffold pre-service teachers in developing a theoretical model for their future practice. A constructivist approach requires that educators consider the knowledge and experiences that students bring to the learning task. Fennimore and Tinzmann identify a difference between a behaviorally oriented curriculum in which knowledge and skills are taught individually and then connected as opposed to a constructivist-oriented curriculum in which students acquire knowledge and skills while carrying out tasks that require higher-order thinking.¹¹ Constructivist curricula should be developed in such a way that students are required to expand and develop prior knowledge by connecting it to new learning (Huitt¹²). Vygotsky’s “zone of proximal development—the distance between actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” embraces this concept¹³) as does Bruner’s instructional principles as outlined by Ferrer who states that:

1. “Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
2. Instruction must be structured so that it can be easily grasped by the student (spiral organization).

¹¹ T. Fennimore and M. Tinzmann, “What is a Thinking Curriculum?” (Oak Brook, IL: North Central Regional Educational Laboratory, 1990). Retrieved May 9, 1999 from <http://www.ncrel.org/ncrel/sdrs/areas/rplesys/thinking.htm>

¹² W. Huitt, “Constructivism,” *Educational Psychology Interactive*. (Valdosta, GA: Valdosta State University, 2003), Retrieved April 12, 2007 From <http://chiron.valdosta.edu/whuitt/col/cogsys/construct.html>

¹³ L. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge, MA: Harvard University Press, 1978), 76.

3. Instruction should be designed to facilitate extrapolation and/or fill in the gaps (going beyond the information given) by stimulating cognitive skills required for application.”¹⁴

Cooperative Learning

Cooperative learning is, we feel, one teaching strategy where constructivism reaches its pinnacle. Johnson, Johnson, and Holubec, in 1990, stated that the amount of research that has been done on cooperative learning in general is “staggering” and that we now know more about “the efficacy” of cooperative learning than other methods/group procedures used in teaching. Among these various methods/procedures are lecturing, age grouping, and departmentalization. Johnson, Johnson, and Holubec further state “...working together to achieve a common goal produces higher achievement and greater productivity than does working alone is so well confirmed by so much research that it stands as one of the strongest principles of social and organizational psychology.”¹⁵

At the college level, attention is increasing in the area of cooperative learning and other forms of teaching strategies that would supplement the lecture and lecture-discussion strategies that now prevail. Some research at this level has revealed positive outcomes for cooperative learning. Judith L. Van Voorhis, in a 1992 presentation to the International Convention on Cooperative Learning (Utrecht, The Netherlands), cited several examples of research that had been done on cooperative learning in college classrooms. Among the values that have been found are increased student involvement in college classes, student enjoyment in the learning process, improved attitudes toward learning, and student mastery of course content.¹⁶ One statement made by Van Voorhis affirms our earlier statement of the need to change teaching strategies at the college level. Van Voorhis states,

If we expect future teachers to teach children cognitive processes in a variety of settings, then we as teachers of preservice teachers need to model, define, and demonstrate these processes. The literature also supported the assertion that students entering colleges today may be underprepared in cognitive processing and learn in a variety of ways. Additional assertions from the literature indicated preservice teachers, as well as the students they will be teaching, may lack the ability to direct their learning and behaviors due to deficits in sociolinguistic

¹⁴ M. Ferrer. “Constructivism ‘Spiral’ ” Retrieved September 17, 2007 from <http://west.net/~ger/Orientation/constructivist.html>

¹⁵ D. W. Johnson, R. T. Johnson, and E. J. Holubec, *Cooperation in the Classroom*, Revised (Edina, MN: Interaction Book Company, 1990), 3:2; 3-3; 3:15-3:16.

¹⁶ J.L. Van Voorhis, “Instruction in Teacher Education: A Descriptive Study of Cooperative Learning,” Paper presented at the International Convention on Cooperative Learning. (Utrecht, Netherlands, 1992), ED 349-297, 1-2.

experiences, such as the use of elaboration and rehearsal strategies in cooperative structures. In order for these prospective teachers to utilize different types of instruction to meet the needs of their future students, they need to experience various types of instruction.¹⁷

The use of cooperative learning at the college level is a reversal from more traditional methods of college-level pedagogy. It is student, rather than teacher-oriented, constructivist rather than re-constructivist, group-oriented rather than individualistic. For this reason, some justification must be given for its usefulness. In a review of recent research on cooperative learning in the college classroom, Johnson, Johnson, and Smith provided assurance of the efficacy of the use of cooperative learning at this level by stating:

Faculty who use cooperative learning are on safe ground. There is a rich theoretical base for cooperative learning. As the research has evolved over the past 35 years, five basic elements have emerged as critical to cooperative work in classrooms: positive interdependence, individual accountability, face-to-face positive interaction, social skills, and group processing. The evidence itself indicates that a) the theories underlying cooperative learning are sound and b) cooperative learning does work in college classrooms.¹⁸

Johnson et al. further indicate that the benefits of cooperative learning are the promotion of more positive attitudes toward learning, compared to competitive and individualistic types of learning.¹⁹ George found that college students in an educational psychology course, following the use of three cooperative learning strategies in the college classroom, had higher overall test scores, promoted more positive attitudes toward classroom instruction, and rated this instruction far more favorably than when students followed an individualized approach to learning.²⁰

Several characteristics of cooperative learning make it especially useful in the training of pre-service and in-service teachers by providing a model for effective teaching practices and an opportunity for teachers to observe and practice the skills that they will eventually be asked to use in their teaching. In addition, cooperative learning practices accommodate individual differences within the classroom by capitalizing on the various strengths of each member of the

¹⁷ Ibid., 3.

¹⁸ D.W. Johnson, R.T. Johnson, and K.A. Smith, "Cooperative Learning Returns to College: What Evidence is There That it Works?" *Change*, July/August, 1998, 27-35. Retrieved May 13, 2007— Website <http://saweb.Memphis.edu/mimsac/downloads/CooperativeLearning.Pdf>, 1-14.

¹⁹ Ibid.

²⁰ P. G. George, "Using Cooperative Learning in the College Classroom," *Thought and Action. The NEA Higher Education Journal*, Spring, 1999, 33-38.

cooperative group; thus, more able members are positioned to scaffold others as needed. Cultural differences enhance, rather than detract from, the group's construction of meaning (Johnson and Johnson,²¹; Slavin,²²; Stevens and Slavin,^{23,24}). Cooperative learning promotes the importance of "meaning-making" in the classroom because of the active nature of the assignment. "Cooperative learners cognitively rehearse and restructure information to retain it in memory and incorporate it into existing cognitive structures" (Johnson, Johnson, and Smith²⁵). Finally, Goodlad stresses that teachers are also concerned with the development of their students' social and personal development. Cooperative learning allows the learners to practice interpersonal as well as academic skills, in effect integrating multiple goals within the application of a single best practice.²⁶

One form of cooperative learning, Jigsaw, was developed by Aronson and associates (Aronson and others²⁷). This strategy calls for a broad topic to be divided into subtopics. Teams of four-five students are placed in heterogeneous groups. Students in each cooperative learning team are assigned or select a subtopic on which to become an expert on the content to be taught as well as on the best way to teach this content. Students with the same subtopic then regroup, forming what has been identified as a counterpart group. These group members then work together, with the teacher's guidance, to define how they will return to their original cooperative learning group to teach others in that group the subtopic on which they have become an expert. An example of how a topic might be divided for studying using Jigsaw is the life of a U.S. president being studied in fifth-grade social studies. The various stages of a president's life might be early days up to school age, education, early career such as life as a lawyer, his home life as an adult, days in the presidency (including important events the president had to deal with), and days after leaving the White House.

²¹ D.W. Johnson and R. T. Johnson, "Mainstreaming and Cooperative Learning Strategies, *Exceptional Children*," 1986, 52, 553-561.

²² R. E. Slavin, *Cooperative Learning: Theory, Research, and Practice* (Boston: Allyn & Bacon, 1990).

²³ R. J. Stevens and R.E. Slavin, "The Cooperative Elementary School: Effects on Students Achievement, Attitudes, and Social Relations," *American Educational Research Journal*, 1995, 32, 321-351.

²⁴ _____, "Effects of a Cooperative Learning Approach in Reading and Writing on Academically Handicapped Students," *Elementary School Journal*, 1995, 95, 241-262.

²⁵ D.W. Johnson, R. T. Johnson, and K.A. Smith, "Cooperative Learning Returns to College: What Evidence is There That it Works?" *Change*, July/August, 1998. Retrieved May 13, 2007—Website <http://saweb.memphis.edu/mimsac/downloads/CooperativeLearning>. Pdf, 4.

²⁶ J. Goodlad, *A Place Called School: Prospects for the Future* (New York: Teachers College Press, 1984).

²⁷ E. Aronson and others, *The Jigsaw Classroom* (Beverly Hills, CA: Sage Publishing Co., 1978).

Stallings and Stipek state, “The Jigsaw method was developed to foster peer cooperation and tutoring and race relations by creating interdependence among students.”²⁸ Research studies measuring the effectiveness of the use of Jigsaw in K-12 settings indicate positive outcomes on academic growth, students’ attitudes toward their classmates, time-on-task, and self esteem (Stallings and Stipek²⁹).

Jigsaw For Teaching Writing Workshop and Guided Reading Using Leveled Books

One of the authors has used Jigsaw successfully with two different pre-service college classes. One class was taking a language arts methods course in which writing instruction was included; another class was in a reading methodology course in which the focus was on guided reading using leveled books. The students were enrolled in a school-based, yearlong internship program. On Monday afternoons during the fall semester, they participated in a mega-methods course (six hours, including language arts, reading, social studies, science, and mathematics methodology). While this left only four full days of internship the first semester, the interns were back in their respective classrooms for the full five weekdays during the spring semester. The course itself was the second six-hour mega-methods course that covered the same subjects; the first having been taken when the students were seniors in an Arts & Sciences discipline but with a minor in Education during what is known as the pre-internship year. The semester hours allotted for language arts and reading methodology were 1.2 hours each in both mega-methods courses (pre-internship and internship), although in this program, all students had taken a required introductory two-hour basic reading course at the beginning of the pre-internship year. Earlier, they had taken a children’s literature course.

The textbook used in the reading segment was Fountas and Pinnell’s *Guided Reading Instruction: First Teaching for All Children*, a very comprehensive book that provides a solid theoretical view of a balanced literacy program, using leveled books; and how to set up and carry out such a program (Fountas and Pinnell³⁰). The textbook used in the writing segment with a

²⁸ J.A. Stallings and D. Stipek, “Research on Early Childhood and Elementary School Teaching Programs,” in *Handbook of Research on Teaching*, 3rd ed., M.C. Wittrock, ed., American Educational Research Association (New York: Macmillan Publishing Company, 1986), 748.

²⁹ Ibid.

³⁰ I. C. Fountas and G. S. Pinnell, *Guided Reading Instruction: Good First Teaching for All Children* (Portsmouth, NH: Heinemann Educational Books, 1996).

different class in the same program a year earlier was Graves' *Writing: Teachers and Children at Work*. This book, first published in 1983, introduces the Workshop Approach to teaching writing. Writing is examined as a craft where (1) children are guided to select their own topics on which to write (a process modeled by the teacher), (2) written products are kept in an individual's folder (known as a portfolio by many today) and modified from time-to-time, (3) frequent conferencing is done, (4) mini-lessons about writing are taught as needed, and (5) children share their written pieces with others during the writing of "a piece" and afterward through some type of display of written products, called publication of writing (Graves³¹).

In the class where the Workshop Approach to writing was taught via Jigsaw, the entire topic of the Workshop Approach was divided into four subtopics: Getting Started, Maintenance and Development, Working With Individual Cases (Children Having Difficulty in Writing), and Publishing and Sharing Writing of Children. There were only fifteen students in this college class interning in one of four different schools in this program, so the cooperative teams were smaller than one might find in a K-12 classroom. In the class of eighteen students that did Jigsaw to learn guided reading using leveled books, the subtopics were Getting Your Classroom Started in a Balanced Literacy Program, Selecting Leveled Books and Organizing Students to Use Them in a Guided Reading Program, Moving Through a Complete Week (five days) of Instruction in a Guided Reading Program, How to Help Students Who Fall Behind in a Guided Reading Program (so-called Struggling Readers), and Integrating Reading and Writing. A sixth topic was added for all groups to explore in addition to the subtopic covered by each cooperative learning team. This topic was on Elements of a Guided Reading Program That Could be (Should be) Adapted to Upper-Elementary and Middle-School Students. Students were asked to think about and be able to explain (not teach) this topic because the Fountas and Pinnell book primarily focuses on guided reading for beginning students, but the instructor of the college course believes that there are certain elements of guided reading that could and should be adapted to older students (especially the use of leveled books in the content areas). It was necessary for a couple of the teams to either have one student on a team take two topics or have someone from another group teach one of the topics when the cooperative groups were reconvened.

³¹ D. H. Graves, *Writing: Teachers & Children at Work* (Portsmouth, NH: Heinemann, 1994).

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Both books are relatively long (over 300 pages each) and have many excellent organizational details that one would need to learn in order to implement the two approaches (guided reading; workshop approach to writing). **However, learning all content in each book was not the focus of the class. Instead, the focus was to know enough philosophy and structure in Writer's Workshop and guided reading using leveled books to be able to implement these two programs in the classroom.** When students joined their counterpart groups, they were asked to first outline the essential points that they would teach to their cooperative team. Much discussion on what should be in the outline followed. These outlines were checked by the instructor prior to the counterpart teams deciding how they were going to teach the content of their subtopic.

In Table 1, the main objective and different learning strategies that were used by the students with Jigsaw in both the writing and reading methodology segments of the megamethods courses are shown. While these strategies were not equally divided across the two classes, to some extent all were used in each class.

Table 1 Cooperative Learning (Jigsaw) in the College Classroom for Teaching Writing Workshop and Guided Reading Using Leveled Books

<p>Main Objective: To help students learn strategies of Jigsaw, Writing Workshop, and Guided Reading Using Leveled Books as they plan and teach members of their cooperative team</p> <p>(Learning Strategies)</p> <ol style="list-style-type: none">1. Identifying in small groups the most essential elements of each subtopic in Writing Workshop and Guided Reading Using Leveled Books2. Outlining subtopic, both individually and in a small group (consensus-building)3. Strategizing how best to teach selected subtopic to members of cooperative team4. Learning more about and implementing different roles (discussant, listener, facilitator, note taker) in small-group learning communities5. Asking about and reflecting on learning modalities of team members6. Teaching a segment (subtopic) and fielding questions about what was taught7. Seeing how broad topics (Workshop Approach to Writing and Guided Reading Using Leveled Books) are structured through stages (beginning, maintaining, full implementation)8. Clarifying concepts and procedures for teaching both reading and writing in the programs being studied in each area9. Learning more about teaching reading and writing to different age levels10. Evaluating individual and group contributions to cooperative teams and counterpart groups11. Projecting how and where Jigsaw could be applied in the curriculum to be taught to upper-elementary/middle school students
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Students in both the writing and reading classes were very resourceful in finding ways to teach their subtopics. While the counterpart groups basically decided on one way to teach their cooperative team the subtopic they selected, some variations were allowed and did occur in teaching that was done. Charts and diagrams were used in some instances. One student developed a Jeopardy-type game to teach her segment of Writer’s Workshop. Another student developed a song to the tune of the university’s fight song for her group’s segment of guided reading. The most common technique employed was the use of PowerPoint presentations, especially with the guided reading class. PowerPoint presentations were planned together, with all students on a counterpart team having input into what was placed on each frame. However,

the student on each counterpart team who was the most skilled in using the computer was generally selected to make the PowerPoint format, with paper copies being given to each team member. Students also ran off paper copies of the presentation for their cooperative team members.

A survey was done at the end of each of the two classes, asking for the effectiveness of group work, individual contributions, which subtopics were learned best, and an overall appraisal of this approach to learning the broader topic. The fifteen students in the writing class all reported positively on the use of Jigsaw, although one felt that others did not understand him when he contributed to plans for teaching the Workshop Approach to writing. Of the eighteen students in the reading class, sixteen were positive, but two stated that they preferred other ways to be taught. One student reported that she learned best on an individual basis where the professor gave study notes and lectured. A second student cited the noise factor during planning and teaching (where groups were working at the same time) as a distraction in learning the materials. The general consensus was that the Jigsaw activity was excellent for covering a broad topic in large blocks of time scattered over a relatively short period of the semester (most of a three-hour block of time for the writing class over a third of the semester; two-fifths of a five-hour block of time for the reading class over about half of the semester). Two evaluative factors mentioned by several students were responsibilities of individual team members and concern that others learn what they taught. In Table 2, (see Page 29) a breakdown of the student responses following the guided reading Jigsaw activity is given. It is interesting to note that while two students preferred other means of teaching, as earlier stated, they gave positive responses about participation in both the cooperative team and the counterpart group (Questions 1 and 2 in Table 2). The self-evaluations and group evaluations (Questions 3 and 4) were both rated quite highly (means of 8.3 and 9.0, respectively, where 1 is lowest and 10 is highest) by the students who participated in this Jigsaw strategy.

Assessments in both segments of the mega-methods course that pertained to writing and reading on end-of-the-semester examinations ran unusually high. When this was discussed with the students, in each class, students stated that they could recall how their cooperative team members covered a specific phase of a question asked on the examination (the song created was the most frequently mentioned activity). Of the eighteen who were taught guided reading using leveled books, a follow-up survey eight months after the students had followed the Jigsaw

approach to teaching-learning, students were asked to list the main concepts and strategies under each of the five topics that had been designated. Students were able to list the major points that they had learned, although the points listed were understandably more thorough for the topic that students had worked in counterpart groups to teach other students (a point that students had earlier mentioned just after the Jigsaw experience was completed).

Semantic Feature Analysis Defined

Another strategy that embraces a constructivist approach to learning is Semantic Feature Analysis (SFA). SFA is a vocabulary strategy that calls for students to use their knowledge and make explorations to contrast two or more words or concepts. As Vacca and Vacca state, “Semantic Feature Analysis (SFA) establishes a meaningful link between students’ prior knowledge and words that are conceptually related to one another” (Vacca and Vacca³²). According to Anders and Bos, this strategy helps reinforce vocabulary considered to be essential for understanding concepts in texts.³³ Furthermore, Nagy pointed out the diverse utility of SFA when relationships between word concepts are not easy to distinguish.³⁴ For SFA, a grid is built in which two or more related words are placed on one axis, and characteristics that are associated with the words/concepts on the first axis are placed on the second axis. For example, cabin, bungalow, mansion, hut, hogan, igloo, and other places where people might dwell could be placed on the horizontal axis of a grid while features one generally associates with dwellings would be placed on the vertical axis. Features such as in the woods, compact, spacious, roomy, simple, and airy are but a few words that might be placed on the vertical axis. When students work together on such a grid, or if they work individually first, they usually write “Y” for yes or a code for “Yes” in the intersecting cell if the feature is one that pertains to a word on the horizontal axis. They may also use an “N” for no (or a code for “No”) if the feature is one that is not possessed by a place of dwelling found on the horizontal axis or leave that cell blank. Where students do not know whether to mark yes or no, a question mark is used. Words that are not readily known call for exploration, thus leading to new knowledge about vocabulary terms.

³² R. T. Vacca and J.L. Vacca, *Content Area Reading: Literacy and Learning Across the Curriculum*, 8th ed. (Boston: Pearson, Allyn and Bacon, 2005), 282.

³³ P.L. Anders and C.S. Bos, “Semantic Feature Analysis: An Interactive Strategy for Vocabulary Development and Text Comprehension,” *Journal of Reading*, 1986, 29 (7), 610-616.

³⁴ W.E. Nagy, *Teaching Vocabulary to Improve Reading Comprehension* (Urbana, IL, National Council of Teachers of English, 2000).

A value of Semantic Feature Analysis is that it expands various conceptual categories of schema, the stored knowledge that aids comprehension (Anders and Bos,³⁵; Johnson and Pearson,³⁶ Pittelman and others,³⁷ Vacca and Vacca³⁸). As pointed out by Palmer, Rowell, and Brooks:

...As students learn, new concepts are linked and organized according to their relationship to pre-existing schema. A form of scaffolding is involved in helping make transitions from known to unknown knowledge.Through scaffolding, teachers initiate interactive strategies that teach students *how* to learn.³⁹

When constructing a Semantic Features Analysis, the teacher should include both known and unknown features. The unknown features would lead the students toward a search for new knowledge while building on their former knowledge, a key element of instructional scaffolding. New concepts can then be expanded and extended through teacher-and self-questioning strategies (Palmer, Rowell, and Brooks⁴⁰). Several modifications of the SFA strategy are possible based on the knowledge base of the students. In an elementary school classroom, students and their teacher can work together as the teacher models the strategies for completing the SFA, while in a college classroom students can be expected to develop many of their own comparative features for the SFA.

Since the early 1980s, SFA has been supported by solid theory and research (Baldwin, Peleg-Bruckner, and McClintock⁴¹; Johnson, Toms-Bronowski, and Pittelman⁴²; Osako and

³⁵ Anders and Bos, "Semantic Feature Analysis," 611.

³⁶ D.D. Johnson and P.D. Pearson, *Teaching Reading Vocabulary*, 2nd ed. (New York: Holt, Rinehart, and Winston, 1984).

³⁷ S. Pittelman and others, *Semantic Feature Analysis: Classroom Applications* (Newark, DE: International Reading Association, 1991).

³⁸ Vacca and Vacca, *Content Area Reading: Literacy and Learning Across the Curriculum*.

³⁹ B. C. Palmer, C. G. Rowell, and M.A. Brooks, "Reflection and Cognitive Strategy Instruction: Modeling Active Learning for Pre-Service Teachers," *Reading Horizons*, 2005, 45(3), 199.

⁴⁰ Ibid.

⁴¹ R. S. Baldwin, Z. Peleg-Bruckner, and A.H. McClintock, "Effects of Topic Interest and Prior Knowledge on Reading Comprehension," *Reading Research Quarterly*, 1985, 20, 497-504.

⁴² D.D. Johnson, S. Toms-Bronowski, and S. Pittelman, "A Review of Trends in Vocabulary Research and the Effects of Prior Knowledge on Instructional Strategies for Vocabulary Acquisition," Theoretical Paper Number 95, (Madison, WI: Center for Education Research, 1981).

Anders⁴³). Bos and Anders focused their research on interactive teaching.⁴⁴ According to Tempe and others,

In their research to determine the effectiveness of various approaches to vocabulary learning, Bos and Anders (1989, 1990, 1992) compared the effectiveness of three semantic-related techniques (mapping, semantic feature analysis, and semantic/syntactic feature analysis) to definition study with students of various ages and abilities. They concluded that all three of the interactive techniques were more effective than the traditional approach that has students write and study definitions.⁴⁵

In addition to active engagement of discussion about the relationships that are being charted and the justifications for same, various processes such as conferring, predicting, and integrating (concepts) are involved when using SFA. (Anders and Bos⁴⁶). In addition, students must determine when they know or do not know concepts charted. As Brozo and Simpson state, meta-cognitive awareness "...is the cognitive process that directs and orchestrates the other active learning processes."⁴⁷

Given the solid theory and research support for SFA with students across the K-12 continuum, a search for research on the use of SFA in pre-service reading courses yielded a paucity of studies. Hypothesizing that SFA would be best learned by doing (following John Dewey's supposition that learning is interactive and social⁴⁸), one of the authors of this paper introduced university students to SFA via two birds—the owl (that the students readily knew)

⁴³ G. N. Osako and P.L. Anders, "The Effect of Reading Interest on Comprehension of Expository Materials With Controls for Prior Knowledge," In J. Niles and L. Harris, eds. , *In Search for Meaning in Reading, Language Processing, and Instruction*, (Rochester, NY: National Reading Conference, 1983).

⁴⁴ C. S. Bos and P.L. Anders, "Developing Higher Level Thinking Skills Through Interactive Teaching," *Journal of Reading, Writing, and Learning Disabilities, International*, 1989, 4(4), 259-274.

⁴⁵ C. Tempe and others, *All Children Read: Teaching for Literacy in Today's Diverse Classroom* (Boston: Allyn & Bacon, 2008), 189.

⁴⁶ Anders and Bos, "Semantic Feature Analysis," 615.

⁴⁷ W. G. Brozo and M.L. Simpson, *Readers, Teachers, and Learners: Expanding Literacy in the Secondary Schools* (New York: Macmillan, 1991), 18.

⁴⁸ J. Dewey, *How We Think* (Lexington, MA: Heath, 1910).

and the dodo (that the students knew little about). The SFA constructed is shown in Figure 1.

Figure 1 Semantic Feature Analysis—The Owl and the Dodo*

Features												
	Bird	Feathers	Nocturnal	Razor-sharp talons	Hooked beak	Bird of prey	Wide wing span	Quick movements	Nests on the ground	Multiple habitats	Binocular vision	Extinct
Owl	➔				➔		➔	?			↑	
Dodo	➔	↑	↑	➔	↑	↑	↑	➔	↑	↑	➔	➔

Code:	➔ = Yes
	↑ = No
	? = Don't know

*Palmer, B. C., Rowell, C. G., and Brooks, M.A., "Reflection and Cognitive Strategy Instruction: Modeling Active Learning for Pre-Service Teachers," *Reading Horizons*, 2005, 45(3), 201. Reprinted With Permission of the Editor.

The university students worked in groups to establish a better understanding between these two kinds of birds, one still in existence and one long extinct. Among other resources, students explored children's books, the Internet, videotapes, and books on birds (Palmer, Rowell, and Brooks⁴⁹). A large number of facts were learned in the search for unique and shared characteristics between the owl and the dodo. The students learned where the dodo once lived

⁴⁹ B. C. Palmer, C. G. Rowell, and M.A. Brooks, "Reflection and Cognitive Strategy Instruction," 204, 214-215.

(island of Mauritius) and located it on the map, how the dodo became extinct, and how the ecosystem was affected by its extinction. Students, in their search for information about the owl, learned that some owls build their nests on the ground (although most kinds of owls do not) and even one type of owl (the Burrowing Owl) goes underground to build its nest. Above all, students learned how the use of the SFA contrasting a known bird with a little-known bird (or other related entities) could lead to **much further learning** in science, social studies, and other content courses, starting out with what was already known (the main tenet in constructivism). The learning strategies involved in this activity were numerous, calling for students to discuss and reflect on concepts, learn new vocabulary terms, be articulate in group discussions, use various listening skills, practice finding resources, and reflect on how these strategies could be transferred to the K-12 classroom.

On the end-of-the-semester examination, on a case-study question, students were asked to design a Semantic Feature Analysis as a part of a larger unit of study. The results were outstanding, clearly showing that students learned much about how to apply SFA to the classroom situation. One year later, a survey was done electronically to see if the university students in the class had used SFA in their own teaching. Several reported that they had done so, with two teachers reporting that they also had introduced this important strategy to teachers in in-service classes.⁵⁰

Another one of the authors has recently used a modified SFA in a graduate-level trends and issues course where the focus is on reflective thinking and writing about current educational issues of the day. After the students had read and reacted via short papers on three types of alternatives to public schooling—vouchers, charter schools, home schooling—that were placed on one axis of a grid, they were asked in small groups to plot on the second axis of the grid the following features: (1) will take funds from public schools, (2) will negatively impact public schools, (3) will allow special interest groups to push their own agendas, (4) will offer healthy competition to public schools, (5) will significantly hurt good private schools now existing, (6) will have significantly greater involvement of parents than now found in public schools, and (7) will affect elementary, middle, and high school students in the same way. The SFA, once completed, led to a lively discussion where students in each group had to not only tell what they put (“Y”, “N”, or ?) in intersecting cells but also had to defend their answers.

⁵⁰ Ibid., 204-205.

Nonsense Stories Used for Identifying Systems in Our Language and for Identifying Major Word Patterns

One teaching approach that stimulates thinking to a deeper level (a main tenet of cognitive and constructivist strategies) than “teacher telling” is the use of simulations. Often these are case studies in which students are asked to read a teaching episode and respond to it. Lunce states that “An educational simulation is based on an internal model of a real-world system or phenomena in which some elements have been simplified or omitted in order to facilitate learning.”⁵¹ Lunce identifies one type of simulation as “situated learning” in which some form of human behavior is modeled, students interact with others, and scenario-based learning activities are used.⁵² Lunce also states that those who have explored situated learning, including McClellan,⁵³ have identified meaningful strategies such as use of stories, reflection, exploration, and articulation (Lunce⁵⁴). Bernstein, Scheerhorn, and Ritter stress that simulations and collaborative teaching together help move college students (especially in introductory classes) from being passive observers to active participants, reasoning that ...“By making students active learners, we motivate them to learn the material and succeed in the class. They also learn to view the material with a more critical eye as they make decisions themselves rather than passively accepting those made by others.”⁵⁵

We have used simulations (especially scenario-based learning activities) successfully with fictitious stories (and sometimes just words and sentences) to motivate students who are just beginning the study of reading and language arts. In doing so, students are involved in reflecting about the systems used in our language and specific patterns in which many words can be classified, such as CVC, CVCe, etc. On the very first day of a beginning reading or language arts class, students working alone are asked to first identify what a system is and then read a nonsense story and answer questions about this story. To keep students from being embarrassed if they do not know the names of systems in operation in their language (although they know

⁵¹ L.M. Lunce, “Simulations: Bringing the Benefits of Situated Learning to the Traditional Classroom,” *Journal of Applied Educational Technology*, 2006, 3(1), 39.

⁵² *Ibid.*, 38-40.

⁵³ H. McClellan, “Situated Learning: Multiple Perspectives,” In H. McLellan, ed., *Situated Learning Perspectives* (Englewood Cliffs, NJ: Educational Technology Publications, 1986), 5-18.

⁵⁴ Lunce, “Simulations,” 38-40.

⁵⁵ J. L. Bernstein, S. Scheerhorn, and S. Ritter, “Using Simulations and Collaborative Teaching to Enhance Introductory Courses,” *College Teaching*, 2002 50.1 9(4), 1-6.

how to use these systems), students are asked to place a five-digit number on the form with the nonsense story with first and last digits that are different to decrease the chances of any two students choosing the same number. Students read the story to themselves and then answer the questions. Students then come together in small groups to discuss their individual answers, completing a group response. Forms first used by individual students are not marked on but used to make contributions to the composite form each group is asked to complete. Both the individual forms and the composite forms are submitted to the instructor. In Table 3, one that has been effective with students in beginning reading/language arts courses, is shown.

Table 3 A Nonsense Story for Learning Systems in the Language and Some Major Word Patterns

Zummy and Wicky	
<p>This is a story of a blimpy ooble. His ved is Zummy Ooble. Zummy is a kide ooble. He is also a vot ooble. Zummy is kide and vot.</p> <p>Zummy has a black and white blay. His ved is Wicky. Wicky is a meeb blay. Wicky is also a gite blay. He is meeb and gite.</p> <p>Wicky and Zummy like to tas. Yesterday, they tassed by the lun. Today, they tassed by the nud. They are always simmy when tassing.</p> <p>Some days Zummy and Wicky go lelling. They lell for teep. Last week they lelled for voil. They are simmy when they go lelling.</p> <p>Most of all, Zummy and Wicky like to fap. They have fapped by the vape. They have fapped by the neep. Would you like to go fapping with Zummy and Wicky?</p> <p>Now Answer These Questions:</p> <ol style="list-style-type: none">1. What system(s) in our language is/are in operation that enable(s) you to pronounce most if not all of the nonsense words?2. In paragraphs three, four, and five base words take on different endings as in tas (s) (ed), tas (s) (ing); lell (ed), lell (ing); fap (p) (ed); fap (p) (ing). What system in our language lets this happen?3. Why is this a story even though it has so many nonsense words?4. What system in our language permits you to tell what Zummy and Wicky like to do most?	

From the authors' Reading and Language Arts class notes

As students move into their small groups, the first task to be accomplished is to reflect further about the meaning of “systems” by identifying various body functions that are separate systems that work with other systems to keep a person alive. Students can easily identify such systems (e.g., the digestive system, the respiratory system, the circulatory system, and so on). They are asked to reflect on their individual definition of “system” and discuss it in their small groups in relation to body-function systems. The students then pool their answers to the questions in Table 3, completing a composite form. Even after pooling their knowledge, some students fail to identify correctly the phonological and morphological systems that help answer question one, the morphological system that helps answer question two, and the syntactical system that helps answer question four. Students can more easily give the characteristics of a story (characters, setting, events) that help answer question three, “Why is this a story even though it has so many nonsense words?”

After discussion of the unique but complementary systems in our language that help us read and write, students then are asked to identify a series of word patterns from the nonsense words and to verify these patterns with a list of real words that they know. Nonsense words in the story in Table 3 and the patterns that follow include **ved, vot, tas, lun, nud, fap** (CVC words where the vowel sound is usually short); **kide, gite, vape** (CVCe where the final e usually dictates that the vowel sound is long); **Zummy, tassed, simmy, tassing, lelling, lelled, fapped, fapping** (where the double consonant usually dictates that the preceding vowel sound is short); **meeb, teep, neep** (where double e is usually pronounced as long e); and **blimpy, Zummy, Wicky, simmy** (where the ending <y> is usually a long e sound).

In a sense, when students cannot identify specifically the language systems in operation, they are not seeing the forest for the trees. Language systems that they have used to the point of applying them automatically have been thought of not so much as “systems” but in everyday use as “tools.”

We have used another activity similar to the nonsense story in Table 3 that also embraces a scenario-based learning activity to help students understand the major kinds of writing systems that are used to record oral language in different parts of the world as well as to think more deeply about their own writing system. In this activity, students are asked to use their own knowledge of selected English words and their meanings to reflect on fictitious people who invented writing systems (but systems that in fact simulate real-world writing systems). (Palmer,

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Rowell, and Brooks⁵⁶). These systems are shown in Table 4, followed by questions that help students analyze differences among the writing systems of the four fictitious groups of people.

⁵⁶ Palmer, Rowell, and Brooks, "Reflection and Cognitive Strategy Instruction," 207-209.

Table 4 Writing Systems of Four Groups of Fictitious People

1. The **Unga** people, through hundreds of years, have developed a system to help them communicate through writing and to help them tell their story to generations to come. Some of the symbols for their words are shown below with the meanings of the words translated in English just under each spoken word:

Written words:								
Spoken words:	ugluh	gup	bupseg	mup	frad	lep	ling	lingning
Translation	(hello)	(girl)	(goodbye)	(boy)	(said)	(cat)	(light)	(lightning)

2. The **Luna** people live between two big mountains, many miles from the **Unga** people. They, too, have developed a writing system that took many hundreds of years to build. Their system is different from the **Unganese** system. Here's how the **Lunacans'** writing system looks, along with English translations.

Written words:								
Spoken words:	toglee	sep	seknok	sek	fep	dap	viss	vissul
Translation	(hello)	(girl)	(goodbye)	(good)	(boy)	(said)	(light)	(lightning)

3. The **Tippa** people are yet another group of people living thousands of miles from both the **Unganese** and the **Lunacans**. Their writing system also developed over hundreds of years. This system is quite different from the systems developed by the **Unganese** and the **Lunacans**. Here is how this system looks.

Written words:	hello	girl	goodbye	good	boy	cat	light	lightning
Spoken words:	hē lo	gurl	gōod bi	gōōd	boi	kat	lit	lit ning
Translation	(hello)	(girl)	(goodbye)	(good)	(boy)	(cat)	(light)	(lightning)

4. The **Gula** people live on an island far from the **Unganese**, the **Lunacans**, and the **Tippalians**. Their writing system is more closely like the system developed by the **Tippalians**, but still different. Some words translated into English and how they are written (in parentheses) by the **Gulalites** follow:

said (sed)	dog (d/g)	cat (kat)	boy (b^)	light (l}t)	lightning (l}tni>)	fin (fin)
man (man)	happy (hap~)	deep (d~p)	okay (ok)	dead (ded)		

Questions:

1. What differences can you see between the writing systems of the **Unganese** and the **Lunacans**?
2. How is the writing system of the **Tippalians** different from the writing systems of the **Unganese** and the **Lunacans**? How are the **Tippalians'** and the **Gulalites'** writing systems alike? How are they different?
3. Which system is like the system that you use everyday? Are there any features of other systems that you use on occasion?
4. Which of the four systems might it be easier to teach children to read? Why?

*Adapted from Palmer, Rowell, and Brooks, "Reflection and Cognitive Strategy Instruction: Modeling Active Learning for Pre-service Teachers," *Reading Horizons*, 2005, 45 (3), 209 and handouts in reading/language arts classes.

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As in the nonsense-story activity, students are given a form with space to record their answers. They code the sheet, using a five-digit number to keep their identity from being known by the instructor. After fifteen-twenty minutes, students are grouped to make a composite of their answers. By pooling their individual knowledge, students are able to figure out that in the first system (the Unga People), single symbols are used for individual words, even where a word is more than one syllable. In the second system, the system of the Lunacans, a symbol is used to represent each syllable. Thus, a two-syllable word has two symbols while a one-syllable word has a single symbol. The third system (the Tippalians) has symbols to represent sounds or phonemes, although some symbols represent more than one sound as is the case with the English language. The fourth system, the one developed by the Gula people, is more of a true alphabetic system with each sound having its own unique symbol.

Most students often state that while they know words in our language have different sounds in them and that there are several ways to write most sounds, they had not thought much about other ways to write. After a bit of probing, however, students can come up with a fairly large number of symbols used in math and other content fields to represent whole words such as %, \$, #, +, = and so on. Occasionally, a student will have had some exposure to Chinese and/or Japanese symbols for writing but usually not know precisely how they differ from our system in which most symbols represent sounds, not words/concepts, or syllables.

Why is this important in classes where instruction in how to teach reading and writing takes place? It is important because it helps set the stage for learning any number of concepts and skills that are later taught. One such concept is phonemic awareness. Phonemic awareness is "...the ability to hear, identify, and manipulate the individual sounds—phonemes—in spoken words." (Adler and others⁵⁷). In our opinion, phonemic awareness is better understood by the college student if that student has an understanding of symbols representing sounds (not syllables or words) in the language to be taught, leading to a better understanding of the alphabetic principle. As one moves more into phoneme-grapheme correspondences and especially into rules that govern these correspondences and their uses, having knowledge that many symbols in our writing system represent different phonemes is helpful.

Position of sounds in a language is also helpful to understand as one begins to teach reading. We often point out that a statement attributed to Sir George Bernard Shaw that **ghoti**

⁵⁷ Adler and others, *Put Reading First*, 4.

can spell **fish** in the English language is wrong. Shaw's explanation (<gh> spells the **f** sound as in **laugh**, <o> spells the short i sound as in **women**, and <ti> spells the **sh** sound as in **nation**) was wrong because position of sound was not considered by Shaw in the **f** and **sh** sounds, and the <o> used to spell the short i sound in **women** is so rare that one cannot generalize that this is really a productive way to spell the short i sound. As one moves more into phonics (using sound-symbol correspondences to predict how to say words), students having a rudimentary knowledge that symbols in words we read and write represent sounds is important.

Conclusion

While you may still argue that there is too much content to cover in your college classes to institute the strategies that we have used to transform passive students into active learners, we argue that the strategies actually serve as a catalyst for more effective independent learning of the content intended as well as related content. We also maintain that this content for most students will soon be forgotten if college professors rely solely on traditional modes of lecture and/or lecture-discussion. We further argue that cooperative learning like Jigsaw that we have used successfully, graphic portrayal of vocabulary terms using SFA where college students interact with each other and explore materials extensively, the simulation strategy of situated learning in two forms (nonsense story and fictitious writing systems), or any of the other myriad ways to get students to use their experiences to learn new materials more effectively, lead to more efficient learning and, in turn, to a more effective transfer to the K-12 classroom. Cognitive and constructivist strategies for teaching reading and writing and learning about the language we use daily provide the theoretical framework for interactive learning that we believe is a reachable goal for college professors of these vital areas of the curriculum.

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Table 2 Responses to Value of Jigsaw for Learning About Guided Reading Using Leveled Books

Question 1. Value of time (one-plus class session) in cooperative teams deciding who would take which of the five topics and how each group member learns best

- My group wasted no time. We asked questions of each other and valued everyone's opinion.
- Beneficial.
- Everyone participated.
- Good use of time. Valuable group work. Helps us see how teachers divide up a subject.
- Helpful. We discussed how each one learned best.
- Helped us focus more on one topic.
- Helpful for others to share their ideas.
- Somewhat valuable to decide which topic each would take.
- Yes. We easily decided which topic we would take.
- Time well spent. Matched topic to our knowledge and interest.
- Yes. It went well.
- Easy to decide. Each member volunteered for topic wanted.
- Yes, we spent quality time making responsible decisions.
- Everyone chose topic he/she wanted.
- We did not need all the time allocated.
- We did a nice job deciding. Everyone got topic wanted.
- We worked well together and made decisions quickly.
- Only problem—four of us and five topics. We were pressured about how extra topic was to be covered.

Question 3. Your effort (scale of 1-10 with 10 highest) on deciding content and how to teach it

Mean = 8.3 Range 5-10

Question 2. Value of time (two-plus class sessions) spent in class in counterpart groups outlining content of topic and planning how to teach each topic to other cooperative team members

- We created an in depth outline, taking two class periods. Each gave valuable input. No wasted time.
- Different ideas/approaches helped make clearer how/what to teach. Helped identify most important concepts to teach.
- Class time spent efficiently.
- In-class time helped us because we aren't in same school.
- It was very valuable. Saved time. I wasn't overwhelmed. Got information needed.
- Valuable time spent in class. Got right to the point. Made sure everyone did something for group.
- Very helpful. Allowed us to plan together without being rushed.
- Very valuable.
- Worked out well. We all did our part.
- Just enough time to get our thoughts together and not have to meet outside class, except e-mail.
- Yes, time was well spent.
- Time was useful. My group worked well together. Just enough time.
- We worked well together. We spent all of the time on who would do what in our group.
- The time was an integral part of the success of our counterpart group.
- Only one session was needed since _____ came to the first session with outline of content.
- Nice job staying on task and developing our ideas. We worked well together.
- Initially, we were concerned if group would discuss and locate information needed for my presentation. But it worked out great. Really pleased with outline of content.
- Spent time wisely but one person was very studious and came to first session with outline.

Question 4. Team effort (1-10 with 10 highest) of your cooperative team in teaching content to total team members

Mean = 9.0 Range

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